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Ep. Correll
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Monarch

THE

MONARCH WATER HEATER.



THE

AUTOMATIC INSTANTANEOUS

HEATING OF WATER.

12 1/2



The Monarch Water Heater Co.

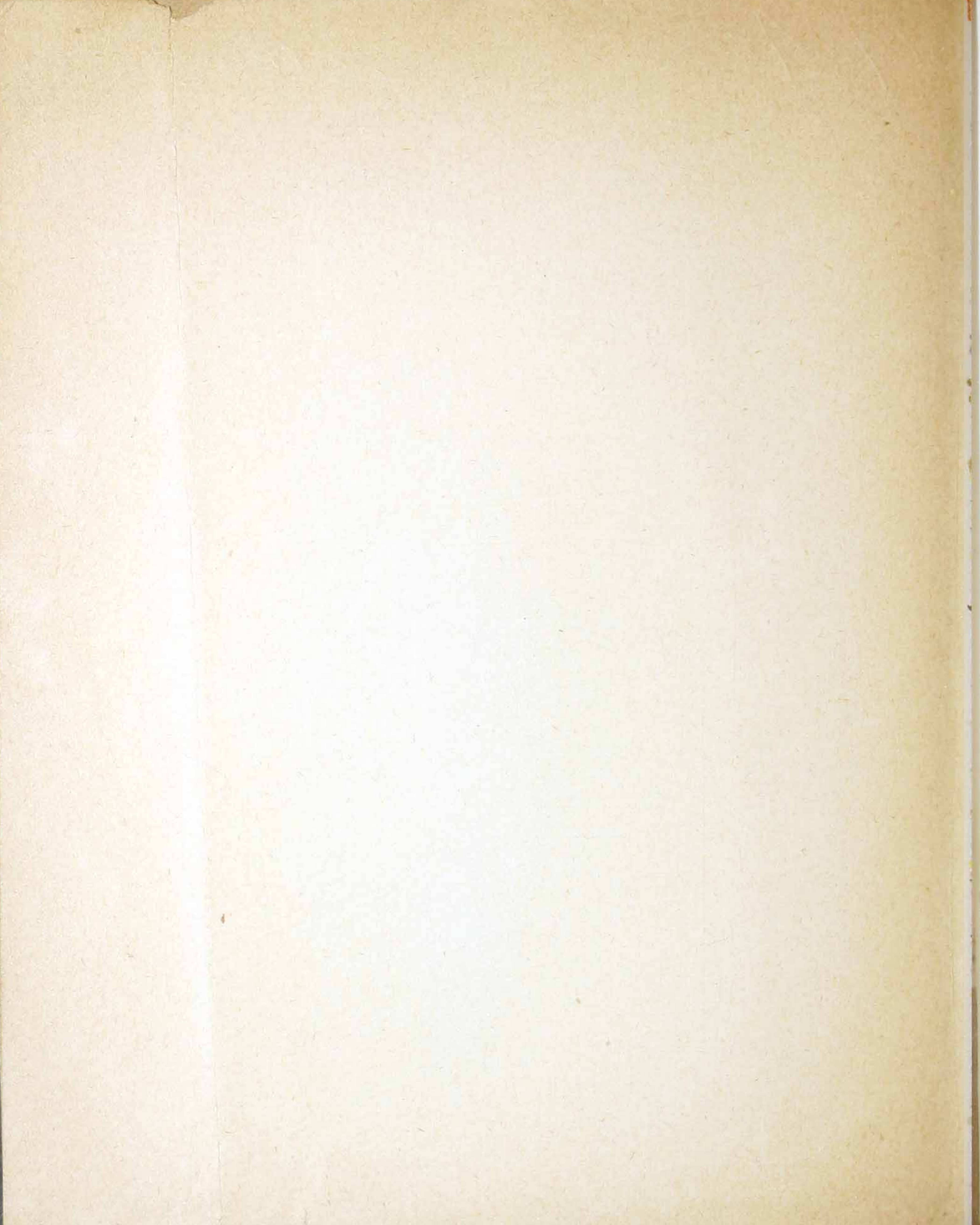
MAKERS.

PITTSBURGH, PA., U. S. A.

Factory and Office, 69 Isabella Street, Allegheny, Pa.

PHILADELPHIA, The Bourse.

WM. A. KRAMER, Sole Agent,
THE BOURSE, PHILADELPHIA, PA.
Telephone 17-18.



THE MONARCH WATER HEATER.

AUTOMATIC—INSTANTANEOUS.

DESIGNED to utilize all the heat produced by the burning of gas, by the most improved and economical appliances.

MADE from copper tubing; it being the best and most desirable material for the purpose, and by its thinness contributing to the absorption of the heat by the water.

CONSTRUCTED with every regard for strength, durability and simplicity. Each coil is tested to 1,000 lbs. by hydrostatic pressure.

ADAPTED for the use of artificial, natural or gasoline gas.

MONARCH WATER HEATER CO.

PITTSBURGH, PA.

MONARCH WATER HEATER CO.'S PATENTS.

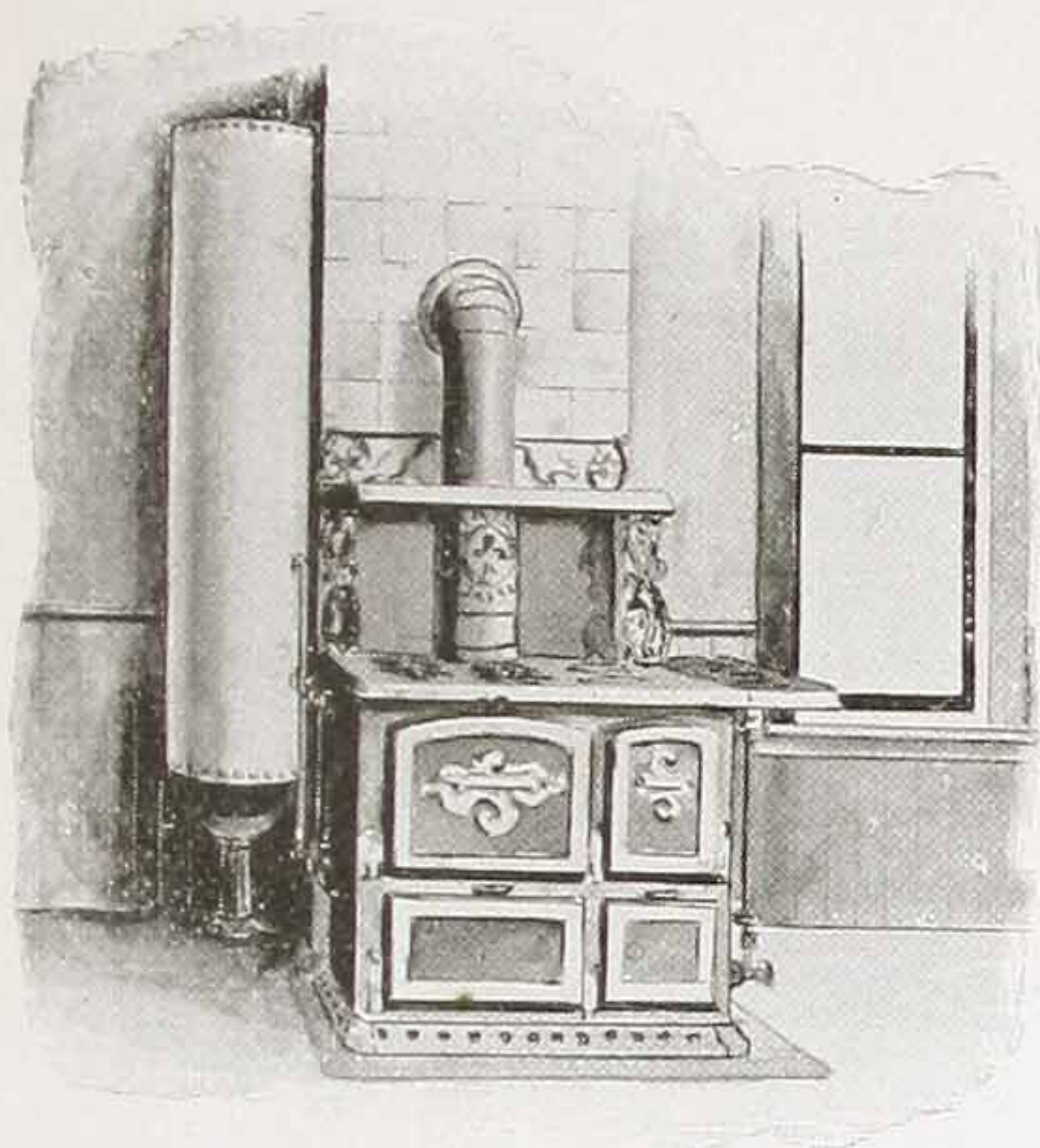
May 25, 1897,	United States.
May 25, 1897,	"
Aug. 9, 1898,	"
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Mar. 29, 1898,	"
May 28, 1897,	Canada.
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May 28, 1897,	"
Sept. 16, 1897,	"
April 22, 1898,	"
May 4, 1898,	"
Oct. 12, 1897,	Great Britain.
Mar. 29, 1898,	"
Oct. 12, 1897,	France.
Mar. 29, 1898,	"
Oct. 12, 1897,	Belgium.
Mar. 29, 1898,	"

And several more now pending in the Patent Office.

CONVENIENCES AND ADVANTAGES OF THE MONARCH WATER HEATERS.

The Monarch Water Heater is the modern way of heating water. It is as naturally succeeding the water-back and kitchen boiler as the kitchen boiler succeeded the old iron kettle. The turning of the hot water faucet anywhere in the house brings a flow of hot water in thirty seconds, that will continue as long as the faucet remains open.

THE COMPARISON.



THE OLD WAY, With Water-Back and Boiler.

The amount of hot water available at one time is limited to about one-half the capacity of the boiler.

Unless there has been a hot fire burning for at least two hours there is no hot water on hand.

To have hot water in summer time it is necessary to have range fire burning all the time, thus overheating the kitchen and entire house.

It takes at least two hours to heat water enough to take a bath.

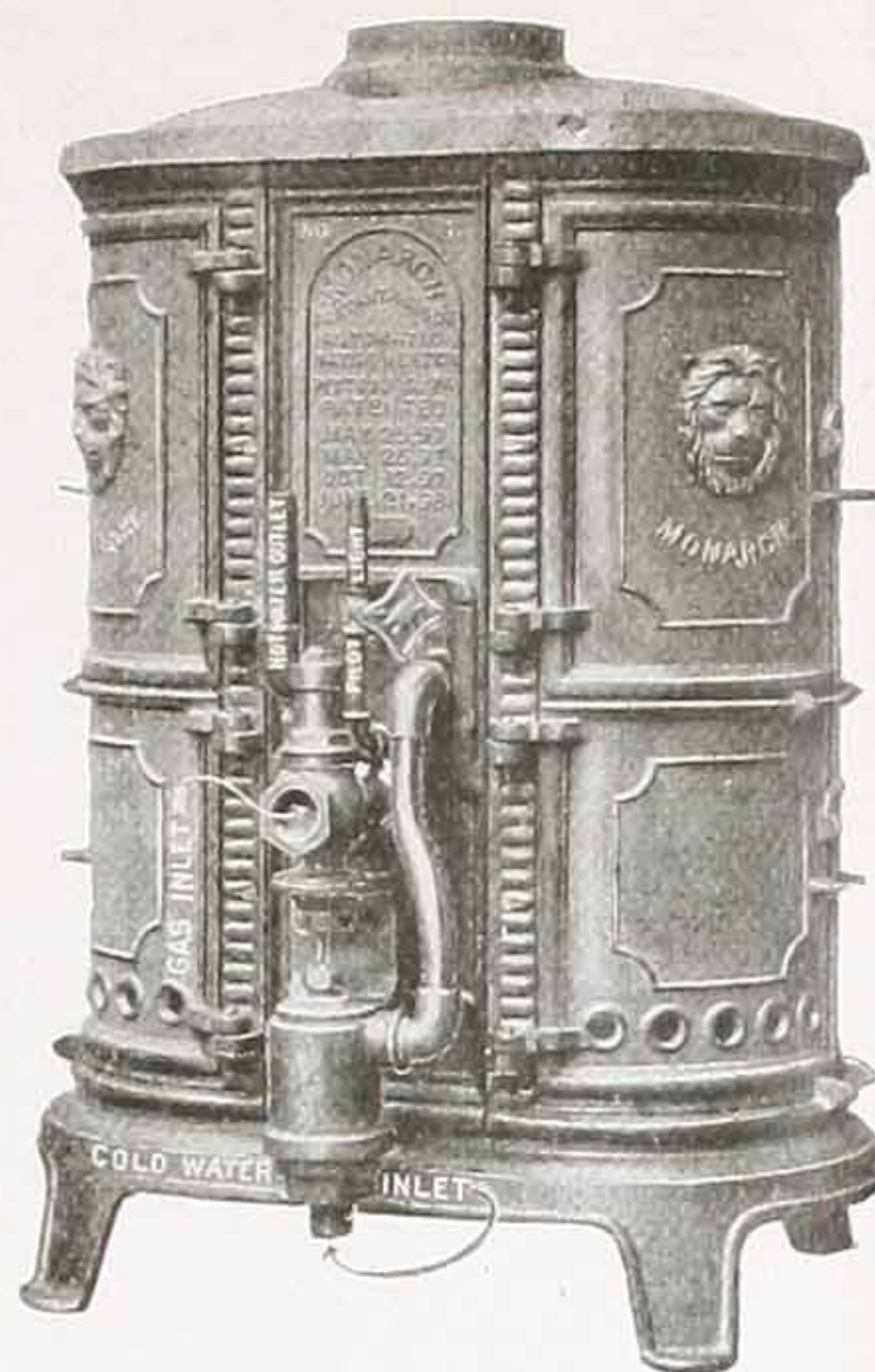
Wastes fuel by heating up range and everything near it, only a small part of which heat is transferred to the water.

Costs more per gallon of water heated.

Seldom ready when wanted.

Makes work and dirt with coal and ashes.

Water never hot in the middle of the night, when, if wanted at all, is wanted in a hurry.



MONARCH HEATER FOR ARTIFICIAL GAS.

THE NEW WAY, With Monarch Water Heaters.

No limit to the quantity available.

Any amount ready as fast as it can be drawn.

Causes no heat anywhere except in the water, where it is wanted.

It takes thirty seconds.

Saves fuel by absorbing into the water all heat produced.

Costs less per gallon of water heated.

Always ready.

No work, no dirt.

Hot water ready night and day.

It can be removed from rented houses as readily as any other stove.

THE MODUS OPERANDI OF THE MONARCH WATER HEATERS.

There is nothing mysterious either in the construction or the operation of these heaters. From both a theoretical and practical standpoint they are founded on common sense lines. As some of our readers may not fully understand why and how certain results which we guarantee can be accomplished, we present the following :

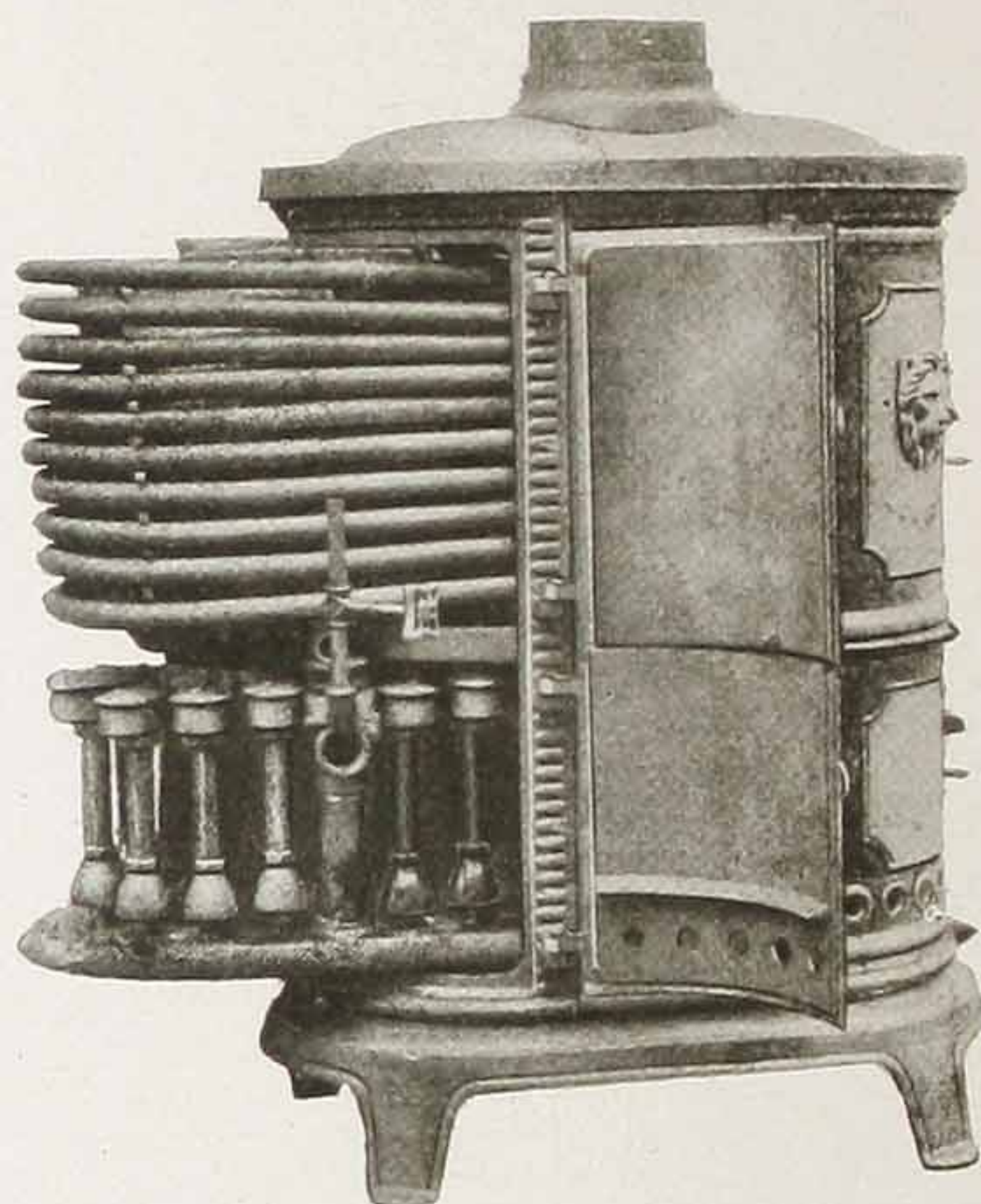
CONSTRUCTION.

THE FLUE COIL.

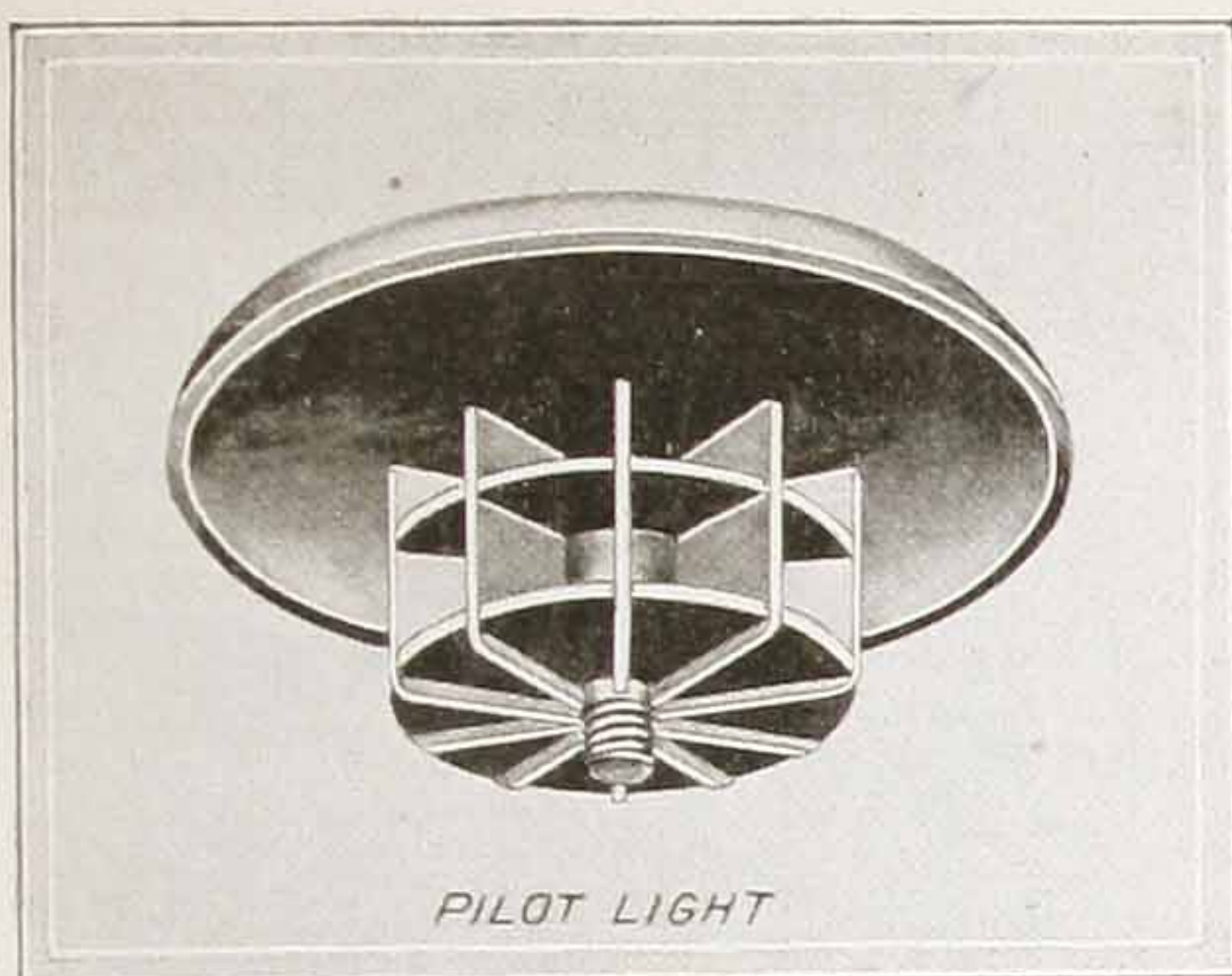
The Monarch Water Heater is made from a long line of copper tubing, coiled inside of an iron jacket. This coil of copper pipe is arranged over the gas burner in such a manner as to utilize all the heat produced by the burning gas.

THE MULTIPLE EFFECT GAS BURNER.

In using gas as fuel, unless complete combustion is obtained, the gas is wasted and carbon formed in the burner, and upon anything to which the heat is applied ; thus retarding the effect of that portion of the gas that is properly burned. In our patented Multiple Effect Gas Burner we obtain complete combustion, so that the full benefit of the gas is obtained and the formation of carbon avoided. We are especially proud of this burner, not only on account of its ingenious arrangement, but also its effective and economical consumption of the gas.



MONARCH HEATER FOR ARTIFICIAL GAS.
EVERY PART CAN BE REMOVED.

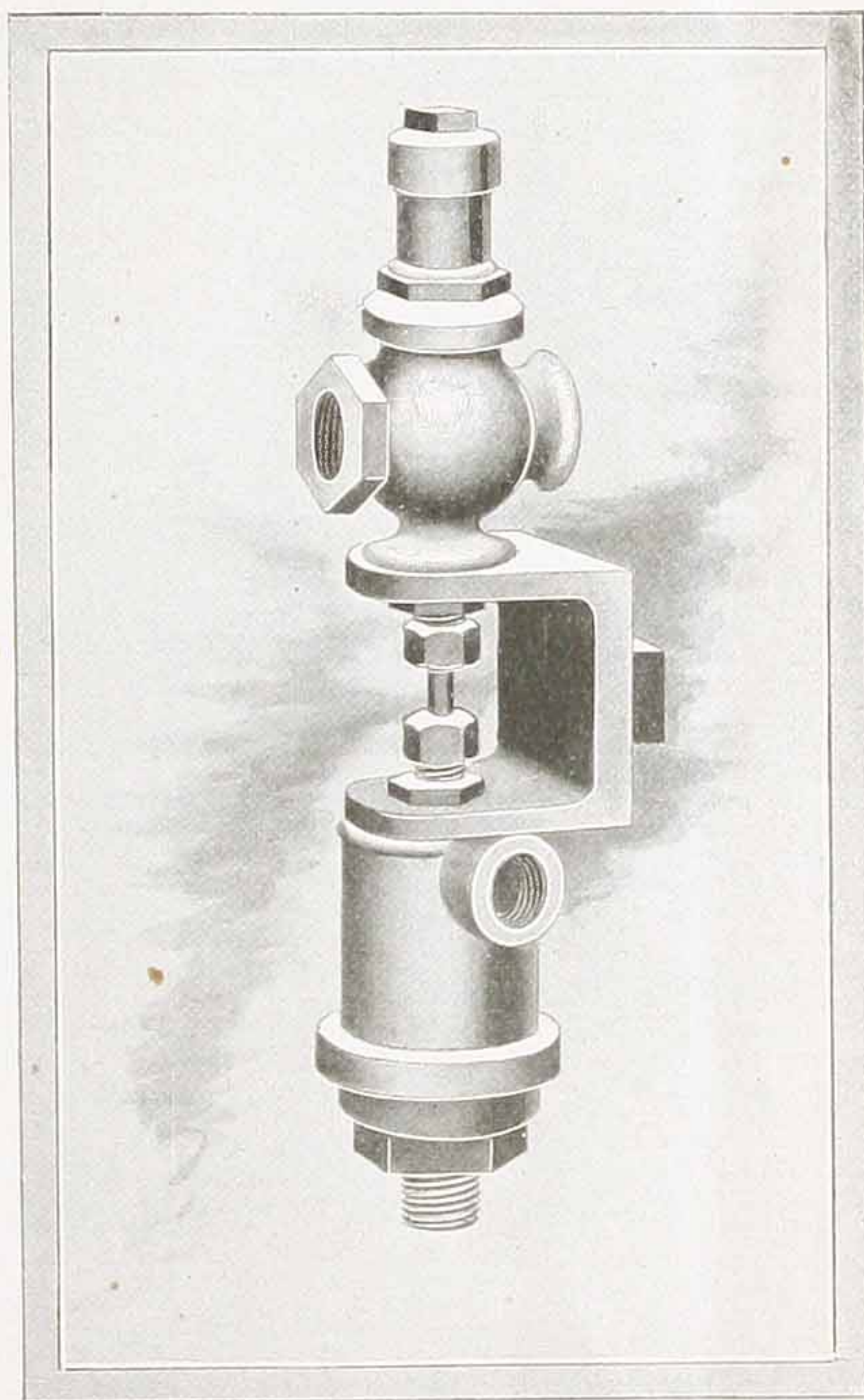


THE PILOT LIGHT.

The Pilot Light, also patented, is a clever little arrangement on the burner that is always ready to ignite the gas in the burner when the water turns it on, and is so made that it is almost impossible for it to blow out.

THE AUTOMATIC WATER AND GAS GRADUATING VALVE.

Attached to the coil at one end and to the gas burner at the other is placed our patented Graduating Valve. This is a combined water and gas valve, and is so constructed that the flow of water through it raises the gas valve, which allows the gas to pass into the burner to heat the water in the copper coil. The closing of the faucet shuts off the gas the instant the water is no longer being drawn. The striking feature of this Automatic Water and Gas Valve is graduating the flow of gas to the flow of water, so that whether there are two gallons or four gallons of water passing through the heater, a pro-



portionate amount of gas is allowed to pass into the burner, and in this way the temperature of the water drawn is always uniform, and economy in the use of gas effected, as only the amount necessary to heat the water drawn is allowed to burn. This feature is covered by a special patent.

THE OPERATION.

The heater is set up in the cellar or any other convenient place and the water connections made, so that all water desired to be heated must pass through the heater; the gas, either artificial or natural, is connected in the burner; the pilot light is lighted, and the heater is ready for work. By turning on any hot water faucet in the house the water is started through the heater. This turns on a supply of gas, which the pilot light ignites, and within thirty seconds you have hot water flowing from the faucet.

COST OF HEATING WATER WITH A MONARCH WATER HEATER.

Many people who have been paying for gas used for illuminating purposes are somewhat dubious about using gas for fuel on account of the supposed high cost. While it is true that the units of heat contained in coal are many times cheaper than the same number of units of heat contained in gas, yet, under some conditions, gas is the cheaper fuel. When it is necessary to apply the heat in a large way and for a long time, as, for instance, under a steam boiler, of course coal is much cheaper; but where the heat is only wanted intermittently and but for a short time and in a small way, gas at any ordinary price will prove the cheaper.

In burning coal for domestic purposes it is estimated that nine-tenths of it is wasted; *i. e.*, goes up the chimney, heats up the range

and the tile in the range, heats up the kitchen, and to some extent the entire house. This waste of fuel when heating with coal is most marked when heating the water with an ordinary water-back and kitchen boiler. The water-back and boiler came into general use about thirty years ago. Since that time there has been no improvement to speak of in this plan of heating water.

The storage boiler is a wasteful device, as quantities of coal are consumed to heat the water it contains, when the chances are that this water will have cooled off before it is wanted. With any storage system of water heating this alternate heating and cooling keeps up day and night, so that every gallon of hot water used has been heated and re-heated some half dozen times, becoming stale and flat, totally unfit for the bath.

It is easy to see why any such crude system of heating water as this would be more expensive even with cheap coal, as compared with gas, than a system by which the water is not heated until needed, and then only as much heated as used.

THE HEATING SURFACE.

By "heating surface" we mean the metal surface that is brought into direct contact with the fire, and through which all the heat must pass from the fire into the water. The larger this heating surface is for heating a given amount of water the more heat is taken up from the fire, and consequently the more economy is effected in the use of fuel.

The ordinary sized kitchen boiler contains forty gallons of water. The average range water-back, to heat this water, has 108 square inches of heating surface.

The Monarch Water Heater, No. 1, has 3,078 square inches of copper heating surface, and contains just $2\frac{1}{2}$ gallons of water at one time.

When you compare these figures do you not see why it is cheaper as well as more convenient to heat water with gas in a Monarch Heater than with coal in the old-fashioned way?

WITH GAS.

When tested at the factory before shipping, $3\frac{1}{4}$ cubic feet of gas will heat four gallons of water. To be on the safe side, however, in counting cost of heating water with gas, we figure that one foot of gas will heat one gallon of water; therefore, with gas at \$1.00 per thousand cubic feet, it will cost five cents per day to heat fifty gallons of water, which quantity should be sufficient for an ordinary family, and is more than can usually be obtained from a kitchen boiler. With natural gas, at 20 cents per thousand feet, it will cost just one cent per day to heat 75 gallons of water.

WITH COAL.

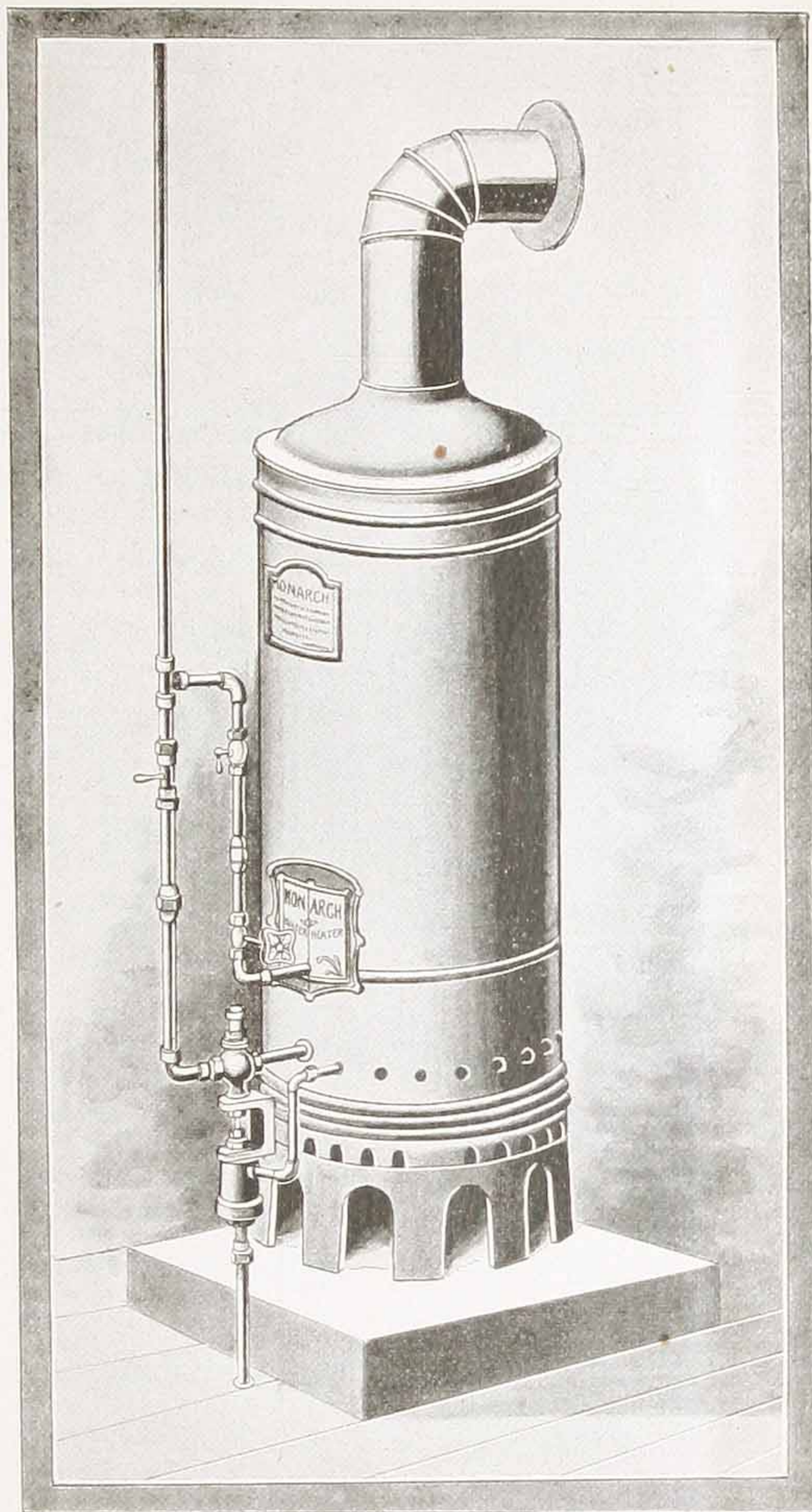
In some tests made with coal it was found that to heat fifty gallons of water to 132 degrees Fahrenheit, and maintaining it at that temperature in a kitchen boiler for twenty-four hours, and counting the coal \$5.00 per ton, it would cost thirty cents for coal alone, not allowing anything for labor or drawing fifty gallons of hot water during the day. This is, of course, more than it costs the average family to heat water, but the reason it does not cost this much is because they do not get nor have available that quantity of hot water, and any economy effected below this amount is at the expense of their convenience.

CAPACITY OF KITCHEN BOILER.

Another disadvantage of the kitchen boiler is its very limited capacity. It is only possible to draw about twenty gallons of hot water from a forty gallon boiler full of hot water, this caused by the fact that the instant that any hot water is drawn from a boiler that same instant the cold water flows in to take the place of the water drawn, and by the time half the hot water is drawn the cold water has mixed sufficiently with that remaining in the boiler to cool it all off.



This cut shows the heater we are manufacturing especially for use in the Natural Gas Districts, and its superiority and reliability is attested by the fact of our having over one thousand of them in use and giving universal satisfaction.



HOW MUCH HOT WATER DO YOU WANT?

- No. 0 Monarch Water Heater contains 65 feet of copper heating coil and furnishes $2\frac{1}{2}$ gallons of hot water per minute. Two and one-half gallons per minute is the amount that will flow from one ordinary faucet. It is suitable for small houses or barber shops, and is just the size where a bath-room only is connected with the heater.
- No. 1 Monarch Water Heater contains 114 feet of copper heating coil and furnishes four gallons of hot water per minute. This is the standard size for family use, and is ample to take care of the needs of all but the larger class of dwellings.
- No. 2 Monarch Water Heater contains 150 feet of copper heating coil and furnishes seven gallons of hot water per minute. It is suitable for dwellings with several bath-rooms and barber shops with large bath trade.
- No. 3 Monarch Water Heater contains 175 feet of copper heating coil and furnishes nine gallons of hot water per minute.
- No. 4 Monarch Water Heater contains 260 feet of copper heating coil and furnishes twelve gallons of hot water per minute. Sizes three and four are suitable for hotels, hospitals, colleges and institutions needing a large quantity of hot water.

THE MONARCH WATER HEATER COMPANY,

PITTSBURGH, PA.

— GUARANTEE —

TO THOSE BUYING MONARCH WATER HEATERS:

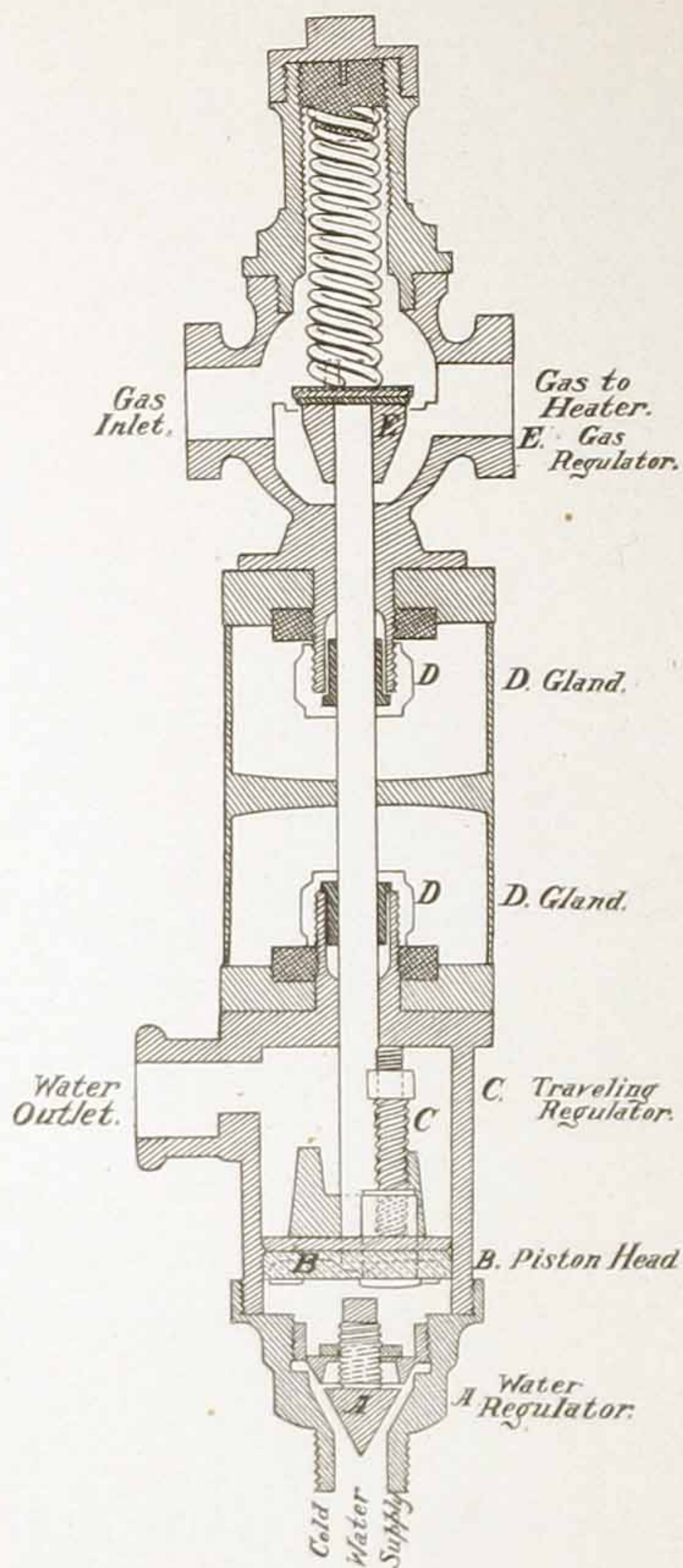
FIRST.—We guarantee all heaters to be made and delivered in a first-class mechanical condition.

SECOND.—We guarantee that with artificial gas testing 750 heat units, as well as standard natural gas, one foot or less gas will heat one gallon water. Average temperature, cold 55°, hot 130°.

THIRD.—We guarantee that if heater is set up according to directions furnished herewith, and after a reasonable trial it does not heat the water in the quantity and with the amount of gas herein stated, we will take it back at full price paid.

THE MONARCH WATER HEATER COMPANY.

SECTIONAL CUT OF AUTOMATIC.



Brass Nipple connecting Automatic to Heater is right and left.
The left end in Heater.

The Monarch Water Heater Company respectfully submits
the following references:

Farmers Deposit National Bank,
Pittsburgh, Pa.
Hotel Sternberg....Fourth Ave., P'gh.
Dr. W. J. Asdale.....Pittsburgh, Pa.
Sixth Precinct Station House,
Buffalo, N. Y.
A. H. Jeremy & Co.....Pittsburgh, Pa.
T. M. Armstrong.....Pittsburgh, Pa.
E. B. Milligan.....Wilkesburg, Pa.
Frank H. Kennedy...Homestead, Pa.
D. S. Wolcott.....Sewickley, Pa.
A. A. Bauerlein.....Bennett, Pa.
W. Snively, M. D.....Pittsburgh, Pa.
J. L. McShane & Co...Pittsburgh, Pa.
Robt. D. McGonnigle..Pittsburgh, Pa.
Max Klein.....Allegheny, Pa.
Wm. A. Heyl.....Pittsburgh, Pa.
Geo. F. Huff.....Greensburg, Pa.
J. T. Keil.....Pittsburgh, Pa.
Alfred E. Hunt.....Pittsburgh, Pa.
Jacob Friday.....Pittsburgh, Pa.
R. W. Beatty.....Pittsburgh, Pa.
W. T. Taggart.....Pittsburgh, Pa.
J. H. Folsom.....Pittsburgh, Pa.
J. A. McLaughlin.....Allegheny, Pa.
James Anderson.....Allegheny, Pa.
M. J. White, House St., Pittsburgh, Pa.
Wm. J. Friday.....Pittsburgh, Pa.
Thos. Ahrens.....Louisville, Ky.
Hay Walker, Jr., Lincoln Avenue,
Allegheny, Pa.
T. H. Given, Neville St., Pittsburgh.
Edward E. Erikson....Pittsburgh, Pa.
W. Harry Brown, Wood St., Pittsburgh
Central Young Women's Christian
Ass'n.....Fifth St., Pittsburgh, Pa.
Indiana State Normal School of
Pennsylvania.....Indiana, Pa.
State Hospital for the Insane,
Warren, Pa.

Chas. A. Fagan, Fourth Ave., Pittsb'gh
F. G. Paulson.....Pittsburgh, Pa.
J. A. Harvey.....Freedom, Pa.
C. E. Crawford.....Emlenton, Pa.
August Loch, Federal St., Allegheny.
W. H. Schoen, Jr.....Pittsburgh, Pa.
Childs Bros.....McKeesport, Pa.
Hotel Freedom.....Freedom, Pa.
Stambaugh-Thompson Co.,
Youngstown, O.
Henry Buhl, Jr.....Allegheny, Pa.
H. M. Curry.....Pittsburgh, Pa.
Fort Pitt Athletic Club....Pittsburgh.
Thos. M. McKee.....Jeannette, Pa.
Jno. A. Staley, Neville St., Pittsburgh.
A. & S. Wilson.....Pittsburgh, Pa.
T. B. Atterbury, Jr.....Pittsburgh, Pa.
Robt. J. McKay.....Pittsburgh, Pa.
Russ, Ridgway & Russ, Albany, N. Y.
Academy of Our Lady of Mercy,
Pittsburgh, Pa.
E. Holcomb.....Pittsburgh, Pa.
A. P. Stephenson,
Wallingford Place, Pittsburgh, Pa.
Western University of Penna.,
Allegheny, Pa.
W. H. Robinson.....Pittsburgh, Pa.
William Martin.....Bellevue, Pa.
Geo. R. Acheson.....Pittsburgh, Pa.
United Presbyterian Home for Aged
People.....Wilkesburg, Pa.
A. M. Helms... ..Steubenville, O.
G. Bauerlein.....Bennett, Pa.
E. J. Bishoffberger.....Freedom, Pa.
Washington County Children's Home;
Arden, Pa.
H. L. Andrews.....Pittsburgh, Pa.
Jno. D. Armstrong.....Pittsburgh, Pa.
Geo. Hibberd & Son, Wheeling, W. V.
Henry Balken.....Pittsburgh, Pa.

M. J. Gibbons Dayton, O.
 Mrs. Thaw, Fifth Av., E. E., Pittsb'gh.
 Dr. J. Styber.....Allegheny Pa.
 H. S. A. Stewart.....Pittsburgh, Pa.
 W. J. White.....Pittsburgh, Pa.
 Bethany Home.....Pittsburgh, Pa.
 Jno. Eaton.....Pittsburgh, Pa.
 Daniel Ripley.....Pittsburgh, Pa.
 McArthur & Kavany....Buffalo, N. Y.
 Engine Co. No. 25.....Pittsburgh, Pa.
 Henry Stephenson.....Erie, Pa.
 Penn'a Reform School, Morganza, Pa.
 Quinn Bros.,

Cottage Grove Ave., Chicago, Ill.
 Jos. T. Brown.....Pittsburgh, Pa.
 Jno. McClurg,

Allegheny Ave., Allegheny, Pa.
 Mrs. Melissa P. McKee....Pittsburgh.
 Robert McKinley.....Pittsburgh, Pa.
 A. Boland.....Morganza, Pa.
 George Cable.....Buffalo, N. Y.
 J. M. Russell.....Pittsburgh, Pa.
 J. W. Fleming.....Pittsburgh, Pa.
 Henry Balken.....Pittsburgh, Pa.
 J. W. Barker.....Hazelwood, Pa.
 Briggs House.....Pittsburgh, Pa.
 F. Bruening.....Pittsburgh, Pa.
 Bergman & Co.....Buffalo, N. Y.
 L. R. Bain & Co.....Chicago, Ill.
 S. S. Bryan.....Titusville, Pa.
 Barker House.....Oakland, Pa.
 Balkam House.....Pittsburgh, Pa.
 Sunderland & Foley, Washington, Pa.
 F. Blythe.....Pittsburgh, Pa.
 S. Zoch.....Pittsburgh, Pa.
 Samuel W. Barnes...Philadelphia, Pa.
 H. C. Bowman.....Baltimore, Md.
 Lewis H. Bennett.....Baltimore, Md.
 G. W. Baum.....Pittsburgh, Pa.
 L. G. Brown.....Pittsburgh, Pa.
 J. C. Baker.....Milwaukee, Wis.
 Mrs. Wilson Harper, E. E., Pittsb'gh.
 Mrs. Ingram.....Ingram Station, Pa.

Murray Verner.....Pittsburgh, Pa.
 Jacobs Hotel.....Pittsburgh, Pa.
 Mr. Janigan.....Boston, Mass.
 Kuhns House.....Pittsburgh, Pa.
 Jno. H. Knepper & Son, Buffalo, N. Y.
 Chas. A. Klie.....Columbus, O.
 A. D. Keister.....Carnegie, Pa.
 Mr. Kendal.....Toledo, O.
 Kist Bros.....Youngstown, O.
 Kenna Bros.....Pittsburgh, Pa.
 C. Kirchler.....Allegheny, Pa.
 Henry S. Leighton.....Braddock, Pa.
 B. Lindsay.....Steubenville, O.
 W. M. Lehman.....Allegheny, Pa.
 Jas. W. Scully.....Allegheny, Pa.
 H. P. Laughlin.....Pittsburgh, Pa.
 Lucy Furnace Co.....Pittsburgh, Pa.
 W. B. Rodgers.....Bellevue, Pa.
 Mansfield Mfg. Co.....Pittsburgh, Pa.
 F. C. Mohr.....Buffalo, N. Y.
 Morning Star Restaurant, Pittsburgh.
 Jas. H. Crumley.....Detroit, Mich.
 C. E. Crawford.....Emlenton, Pa.
 A. Drynan & Son.....Sewickley, Pa.
 J. I. Dick.....Scottdale, Pa.
 Geo. Danner.....Buffalo, N. Y.
 Martin J. Delaney.....Baltimore, Md.
 E. G. Davidson.....Baltimore, Md.
 Chas. Donnelly.....Pittsburgh, Pa.
 Davis & Lew.....Pittsburgh, Pa.
 Jno. Tate.....Pittsburgh, Pa.
 Engine House No. 8...Pittsburgh, Pa.
 Engine House No. 26, Pittsburgh, Pa.
 Engine House No. 24, Pittsburgh, Pa.
 Engine House No. 19, Pittsburgh, Pa.
 Episcopal Church Home, Pittsburgh.
 Engine House No. 5...Pittsburgh, Pa.
 W. A. Eisman.....Freeport, Pa.
 Erie Heating & Plumbing Co., Erie, Pa.
 Everts & Overdeer.....Lancaster, Pa.
 J. A. Edwards.....Chicago, Ill.
 Folsom Bros.....Pittsburgh, Pa.
 Thos. Fawcett, Sr.....Pittsburgh, Pa.

Fire Bros.....Allegheny, Pa.
 W. H. Perrin..... Pittsburgh, Pa.
 Peck Bros.....Chicago, Ill.
 Jno. Porsch..... Erie, Pa.
 Pierce & Cox.....Boston Mass.
 Chas. T. Perry.....Helena, Montana.
 E. W. Rolfe.....Pittsburgh, Pa.
 M. C. Ryan.....Chicago, Ill.
 J. H. Riddle.....Sharpsburg, Pa.
 J. J. Ruddy..... Aurora, Ill.
 H. L. Rook.....Pittsburgh, Pa.
 S. M. Reynolds.....Avalon, Pa.
 J. M. Reidy.....Oil City, Pa.
 St. John's Hospital.....Allegheny, Pa.
 Jno. R. Sulzer & Son...Allegheny, Pa.
 Standard Mfg. Co.....Pittsburgh, Pa.
 A. P. Stevenson.....Pittsburgh, Pa.
 Sadler, Martin & Evans...Pittsburgh.
 James Slattery.....Titusville, Pa.
 Sutton's Hospital.....Allegheny, Pa.
 L. B. Scheible.....Youngstown, O.
 Sharpsburg Supply Co., Sharpsburg, Pa.
 Spear House.....Pittsburgh, Pa.
 Scholl & Sample.....Youngstown, O.
 B. F. Shaffer & Son, Wilkinsburg, Pa.
 Foley Bros.....Indianapolis Ind.
 L. E. Freeman.....Pittsburgh, Pa.
 Fitzsimmons & Co.....Chicago, Ill.
 John Fite.....Pittsburgh, Pa.
 Freedom Hotel.....Freedom, Pa.
 J. L. Gullet.....Bellevue, Pa.
 J. W. Griffin's Sons.....Buffalo, N. Y.
 Girard Hotel.....Allegheny, Pa.
 Jno. Gormley.....Philadelphia, Pa.
 Geary's Restaurant.....Oil City, Pa.
 J. L. Gloninger.....Pittsburgh, Pa.
 A. E. Hunt.....Pittsburgh, Pa.
 Hahn's Hotel... Sharpsburg, Pa.
 U. P. Horne.....Wilkinsburg, Pa.
 J. E. Hughes.....Pittsburgh, Pa.
 Harveys' House.....Freedom, Pa.
 J. A. G. House.....Pittsburgh, Pa.
 J. E. Hedman.....Chicago, Ill.

St. Patrick's Auditorium.....Erie, Pa.
 Herman House.....Pittsburgh, Pa.
 Ed. J. Hannan.....Washington, D. C.
 N. L. Hatfield & Bro.....Troy, O.
 Hibner, Hoover & Co.....Du Bois, Pa.
 D. J. Murphy.....Washington, D. C.
 Miller & Johnston...Fall River, Mass.
 Masters & Becker.....Hulton, Pa.
 Metzgar House.....Beaver Falls, Pa.
 Merchant Collier.....Brownsville, Pa.
 T. M. Miller.....Pittsburgh, Pa.
 McClelland House.....Pittsburgh, Pa.
 Thos. H. Rose.....Allegheny, Pa.
 C. M. McClure.....Uniontown, Pa.
 L. Vilsack.....Pittsburgh, Pa.
 Alex. McGraw.....E. Liverpool, O.
 Thos. McNally.....Pittsburgh, Pa.
 Wm. Neeb.Pittsburgh, Pa.
 National Supply Co.....Toledo, O.
 National Transit Co..... Oil City, Pa.
 J. C. Norris.....Bellevue, Pa.
 Geo. B. Neil.....Bellevue, Pa.
 H. H. Negley.....Pittsburgh, Pa.
 L. J. Steinberg.....Pittsburgh, Pa.
 J. E. Neff.....Washington, Pa.
 Oil City Hospital.....Oil City, Pa.
 Oshea Bros.....Chicago, Ill.
 J. E. Obitz.....Pittsburgh, Pa.
 J. P. O'Brien.....Pittsburgh, Pa.
 E. M. Bigelow.....Pittsburgh, Pa.
 A. D. Burns.....Bradford, Pa.
 T. B. Battersburg.....Pittsburgh, Pa.
 W. J. Butler.....Erie, Pa.
 J. H. Brown & Son....Ashbourne, Pa.
 Bradley Restaurant....Pittsburgh, Pa.
 F. A. Bradley & Co.....Buffalo, N. Y.
 Theo. Bingham.....Pittsburgh, Pa.
 Clarence Burleigh.....Oakland, Pa.
 O. R. Cook.....Carnegie, Pa.
 Mrs. S. Connelly.....Pittsburgh, Pa.
 Dr. Cznesekie.Aspinwall, Pa.
 F. H. Cullen.....Pittsburgh, Pa.
 Jas. B. Crawford.....Oil City, Pa.

